for the refrigerator) are equal to or greater than the highest surge load of the highest manual appliance in the Table 3-A (hairdryer on high at 1600 Watts).

4. In this example the generator capacity is increased and two appliances are added to the system. The two appliances are an electric hot water heater and a washing machine. Interrupt switches are not configured to support the water heater or the washing machine. The electric loads of the other appliances are the same as those in example 3.

The generator surge capability is increased to 7000 Watts and the continuous capability to 6500 Watts. The electric hot water heater has a surge and continuous load of 3000 Watts. The electric hot water heater is on a timer that allows it to operate from 3:00 am to 6:00 am and from 6:00 pm to 8:00 pm. The washing machine has a maximum surge load of 1600 Watts and a maximum continuous load of 500 Watts. The washing machine also has a 30-minute wash cycle.

Given the electric hot water heater does not have an interrupt switch, the values of SR1 and CR1 must compensate for the load by changing with time of day. A 15-minute system adjustment period is added to the beginning of these time periods. There is a 5-minute safety period added to the end of the cycle to allow for potential timing errors between clocks in the system. Therefore from 2:45 am – 6:05am and from 5:45 pm – 8:05 pm, the values of SR1 and CR1 are:

SR1 = GS – 3000 Watts = 7000 Watts – 3000 Watts = 4000 Watts

CR1 = GC – 3000 Watts = 6500 Watts – 3000 Watts = 3500 Watts

Whereby GS and GC are the rated generator surge and continuous capacities, respectively. Based on the calculations above, the generator monitor 10 had SR1 set to 4000 Watts and CR1 set to 3500 Watts during these time periods.

For those times outside the hours 2:45 am – 6:05am and 5:45 pm – 8:05 pm, the values of SR1 and CR1 are:

SR1 = GS = 7000 Watts

CR1 = GC = 6500 Watts

The generator monitor 10 has SR_1 set to 7000 Watts and CR1 set to 6500 Watts during these alternate time periods.

The refrigerator and heating system is given a low priority during the hours of 6:00 am and 8:00 am when the family is taking showers, operating the hair dryer and cooking breakfast with the stove, toaster oven and microwave. The reference outputs for the GAP levels (GAPS2 and GAPC2) monitored by the interrupt switches supporting the refrigerator and heating system, have their reference outputs lowered by the generator monitor 10, allowing them to activate only when most other appliance loads are turned off. During this time period from 6:00 am to 8:00 am, the generator monitor process changes the surge reference output 2 (SR2) to 3000 Watts and the continuous reference output 2, (CR2) to 2000 Watts. This causes the GAP levels to be calculated as follows:

$GAPS_2 = SR_2 - \text{Momentary Load}$

$GAPS_2 = 3000 - \text{Momentary Load}$

$GAPC_2 = CR_2 - \text{Momentary Load}$

$GAPC_2 = 2000 - \text{Momentary Load}$

Note that when the momentary load is greater than 1000 Watts, the GAPS2 are low enough for the refrigerator interrupt switch 20 to hold the refrigerator disabled. When the momentary load is greater than 1600 Watts, the GAPC2 is low enough for the heating system interrupt switch 20 to hold the heating system disabled. Granted this is not advised for an extended period of time, but for the two hours the family wants most of the generator power for other appliances, they may choose to consciously reduce the number of times they open the refrigerator door and get by with potentially depriving the refrigerator of power for this two-hour period. Independent of the appropriateness of the

time period for keeping a refrigerator disabled, or any other appliance disabled, the example demonstrates how priorities can be set and changed with time of day to allocate generator power in accordance with the user's preferences.

Note, once the morning time period had passed, SR2 can be set to a higher level, perhaps 6000 Watts and CR2 to 5000 Watts, or even set SR2 and CR2 to the full rated capacity of the generator.

Assume the homeowner decides the percentage of total generator power used by the simultaneous running of both the hot water heater and the washing machine is too high and prevents the usage of other appliances, deemed more important by the user. Also assume the user does not want to set the GAP level for the washing machine to change with time of day. For this scenario, an interrupt switch with a power request button is installed in the laundry room. The power request button is set to request a lowering of reference outputs by 1600 Watts for the 30-minute wash cycle. This lowering of reference outputs occurs once the interrupt switch senses the GAP levels have been sufficient for a period greater than the wait period dictated by the interrupt switch priority. The interrupt switch then transmits the request for reference outputs to be lowered just prior to closing the switch, enabling the washing machine and allowing it to start its cycle. To comply with the homeowner's intent of preventing the washing machine from running simultaneously with the electric hot water heater, the reference outputs are set just below the combined load of both the washing machine and the water heater. With a washing machine surge load of 1600 Watts and an electric hot water heater load of 3000 Watts, the combined total is 4600 Watts. Therefore, the reference output for the washing machine GAP level is set just below this total, at 4500 Watts. This reference output being set 100 Watts lower than the required surge load of both the washing machine, and the water heater, prevents the user display 30 from reporting sufficient power for the washing machine. Therefore in this configuration, the interrupt switch on the washing machine interrupts power whenever the water heater is running. Once the water heater cycles off, at the end of its timed cycle, the GAP level monitored